NUCLEAR REGULATORY COMMISSION
Docket No. 030-05004
May 19, 2005
Environmental Assessment
Related to Application for a License Amendment
of U.S. Nuclear Regulatory Commission Materials License No. 22-08799-02
Northern States Power Company's Pathfinder Facility in Sioux Falls, South Dakota

Summary

The Pathfinder facility is owned by Northern States Power Company Dba Xcel Energy (Xcel Energy, or the licensee). The licensee has submitted the Pathfinder Decommissioning Plan (DP) for the U.S. Nuclear Regulatory Commission (NRC) approval and requested a license amendment to authorize decommissioning activities in accordance with this plan. NRC staff has developed this environmental assessment (EA) in support of the license amendment request.

The Pathfinder site is located in Minnehaha County, South Dakota. The site is approximately six miles northeast of the Sioux Falls city center and two miles east of Brandon, South Dakota. The current and projected land use in the area is primarily agricultural, with some industrial and urban components.

The proposed decommissioning activities pose very low risk to the public health and the environment. The largest portion of radioactive material at the Pathfinder site was removed by previous remediation activities in 1991. In November 1992, NRC amended the license to authorize: the unrestricted release of the reactor building, fuel storage building, and waste storage building; the demolition of the reactor building; and the possession of fixed activation products at the Pathfinder site. Only a small fraction of the contamination from reactor operations is present at the site, and the radiological history of the site is well documented. Annual surveys have been conducted since 1969, and the site radiological profile was recently updated by a comprehensive characterization survey. These surveys indicate that the remaining residual radioactivity levels at the site are relatively low. The contamination is primarily localized to surfaces within the Turbine Building and Boiler Building. The removal of the residual radioactivity within the steam, feedwater, and condensate portions of these buildings is the focus of this decommissioning project. According to the licensee, this residual radioactivity is principally composed of Co-60 (40 millicuries) and Zn-65 (1 millicurie). Previous site characterization surveys indicate that soil, groundwater, and surface waters are not contaminated and will not require remediation. On October 12, 2004, NRC conducted an inspection of the Pathfinder facility that included the collection of groundwater and surface water samples to ascertain whether licensed material may be present in these media. The resulting inspection report (See ADAMS ML043500229) found no evidence of licensed material in the water samples.

The NRC staff has evaluated Xcel Energy's request and has developed this EA to support the review of Xcel Energy's proposed DP and license amendment request, in accordance with the requirements of 10 CFR Part 51. Based on the staff's evaluation, the conclusion of the EA is a Finding of No Significant Impact (FONSI) on human health and the environment for the proposed licensing action.

Introduction

On February 21, 2003, Xcel Energy notified NRC that it had permanently ceased operating activities at the Pathfinder facility. On February 17, 2004, Xcel Energy submitted a DP (See ADAMS ML040630549) for NRC approval to authorize decommissioning activities in accordance with the requirements of 10 CFR 30.36 (g). NRC issued a Federal Register notice (69 FR 47185) on August 4, 2004, announcing Xcel Energy's license amendment request and opportunity to provide public comments. On August 30, 2004, NRC also conducted a public meeting in the vicinity of the site to discuss the proposed decommissioning activities and answer questions from the public. The NRC staff has received no comments related to the proposed decommissioning activities. On September 30, 2004, NRC requested additional information in support of its review of the DP. On December 21, 2004, Xcel Energy responded to the staff's request for additional information which included revisions to the DP (See ADAMS ML050100054). Xcel Energy is obligated to remediate the Pathfinder facility to meet the release criteria established in 10 CFR Part 20, Subpart E. Xcel Energy has proposed a decommissioning approach that will achieve unrestricted release of the site.

The Proposed Action

The proposed action is to amend NRC Radioactive Materials License No. 22-08799-02 to authorize decommissioning activities in accordance with the DP. The proposed decommissioning is primarily limited to remediation within existing buildings with no building demolition. Shipment of low level radioactive waste and conduct of final status surveys are also principle decommissioning activities. These activities will be accomplished following NRC's approval of the DP and license amendment request. Remediation activities are currently scheduled to begin in late 2005 and end in late 2006. The proposed remediation activities will involve routine sampling and small scale remediation activities within existing site buildings. Also, no building demolition is planned, as Xcel Energy intends to use the remediated buildings for other ongoing non-nuclear operations. No remediation of soil, groundwater, or surface water is planned since previous characterization surveys did not identify any radioactivity in these media attributable to licensed activities.

The licensee's objective for the decommissioning project, as described in the DP, is to remediate residual contamination in affected buildings or any other areas sufficiently to enable unrestricted use, while ensuring exposures to occupational workers and the public during the decommissioning are maintained as low as reasonably achievable (ALARA). Xcel Energy's DP proposes to use Derived Concentration Guideline Levels (DCGLs) that are screening values developed by NRC (65 FR 37186, June 13, 2000) to demonstrate compliance with the radiological criteria for unrestricted use in 10 CFR 20.1402, with the exception of Ag-108m. For Ag-108m, RESRAD-BUILD Version 3.21 was used to develop the DCGL for building surfaces because a screening value for Ag-108m is not available in the published screening tables. By using the screening values, the Pathfinder DCGLs will conservatively define the amount of residual radioactivity in buildings and soils that will satisfy the NRC requirements for unrestricted use in 10 CFR 20.1402, "Radiological Criteria for License Termination." The DCGLs to be used for decommissioning are as follows:

Pathfinder DCGLs for Building Surfaces

Radionuclide	***DCGL (dpm/100 cm^2)***
H-3	*1.2E+8*
Co-60	*7.1E+3*
Zn-65	*4.8E+4*
Ag-108m	*1.7E4*
Cs-137	*2.8E+4*
Eu-152	*1.3E+4*
Eu-154	*1.1E+4*
Eu-155	*1.6E+5*

Pathfinder DCGLs for Soil

Radionuclide	***DCGL (pCi/g)***
H-3	*110*
Co-60	*3.8*
Zn-65	*11*
Cs-137	*11*
Eu-152	*8.7*
Eu-154	*8.0*
Eu-155	*280*

The dose contribution from past decommissioning activities at the Pathfinder site was considered in the development of the DCGLs. The 25 mrem per year dose criterion is applicable to the entire Pathfinder site, including residual radioactivity from past decommissioning activities at the site. The licensee has provided a bounding dose calculation to conservatively estimate the annual dose to a hypothetical individual exposed to residual contamination from the previously decommissioned Pathfinder Reactor Building. The calculated dose contribution from residual radioactivity from the previously decommissioned Reactor Building is insignificant (0.04 mrem/year), and has no cumulative effect when compared to the 25 mrem/year dose criterion for unrestricted use of the site.

Purpose and Need For Proposed Action

The purpose of the proposed action is to reduce residual radioactivity at the Pathfinder site to a level that permits release of the property for unrestricted use. NRC is fulfilling its responsibility under the Atomic Energy Act to make a decision on a proposed action for decommissioning that ensures protection of the public health and safety and the environment. The application for license amendment and NRC approval is necessary for Xcel Energy to proceed with the decommissioning activities as required by the timeliness requirements of 10 CFR 30.36(g). A change to the current license is necessary, since no decommissioning activities are presently authorized.

Affected Environment and Environmental Impacts

The NRC staff has reviewed the decommissioning plan for the Pathfinder facility and examined the impacts of decommissioning. Based on its review, the staff has determined that the affected environment and the environmental impacts associated with this decommissioning action are bounded by the impacts evaluated by the "Generic Environmental Impact Statement in Support of Rulemaking on Radiological Criteria for License Termination of NRC-Licensed Nuclear Facilities" (NUREG-1496). Additionally, no non-radiological impacts were identified. The staff also finds that the proposed decommissioning of the Pathfinder site is in compliance with 10 CFR 20.1402, the radiological criteria for unrestricted use.

Contamination controls will be implemented during decommissioning to prevent airborne and surface contamination from escaping the remediation work areas, and therefore, no release of airborne contamination is anticipated. However, the potential will exist for generating airborne effluents during removal and handling of contaminated materials. If produced, any effluents from the proposed decommissioning activities would be treated to meet the requirements in 10 CFR Part 20. Radioactive waste (e.g., HEPA filters, metals and concrete cuttings, etc.) will be containerized onsite pending shipment to a licensed radioactive waste treatment or disposal facility. No liquid effluents are expected to be generated during decommissioning.

Xcel Energy and its subcontractor would perform the remediation under Xcel Energy's license, with Xcel Energy overseeing the activities and maintaining primary responsibility. Xcel Energy has developed adequate radiation protection procedures and capabilities and will implement an acceptable program to keep exposure to radioactive materials ALARA. As noted above, Xcel Energy has prepared a DP describing the work to be performed, and work activities are not anticipated to result in a dose to workers or the public in excess of the 10 CFR Part 20 limits. NRC's past experience with decommissioning activities at sites similar to the Pathfinder site indicate that public and worker exposure will be far below the limits in 10 CFR Part 20.

Alternatives to the Proposed Action

The no action alternative would leave the site in its existing condition without decommissioning, which would keep the licensed material onsite, without disposal. This alternative would increase the radiological risk to the local community and the environment. This alternative is not acceptable because it will result in violation of NRC's Timeliness Rule (10 CFR 30.36), which requires licensees to remove licensed materials onsite during decommissioning of their facilities when licensed activities cease, and to request termination of their radioactive materials license.

Agencies and Persons Consulted

The NRC staff consulted with the South Dakota Department of Environment and Natural Resources, the State Historical Preservation Office, and the U.S. Fish and Wildlife Service in regard to any adverse effects of decommissioning activities. Based on these consultations, the NRC staff foresees no significant impact to environmental, historical or cultural resources. Since the proposed decommissioning activities are primarily limited to remediation within existing buildings with no building demolition, no significant adverse effects on these resources are expected.

Conclusions

The NRC staff has concluded that the proposed action complies with 10 CFR Part 20. Decommissioning of the site to the DCGLs proposed for this action reduce residual contamination levels at the site, enabling release of the site for unrestricted use and termination of the radioactive materials license. No radiologically contaminated effluents are expected during the decommissioning. Occupational doses to decommissioning workers are expected to be low and well within the limits of 10 CFR Part 20. No radiation exposure to any member of the public is expected, and public exposure would therefore, also be less than the applicable public exposure limits of 10 CFR Part 20.

The NRC staff has prepared this EA in support of the proposed license amendment to authorize decommissioning activies at the Pathfinder site. On the basis of this EA, NRC staff has concluded that there are no significant impacts from the proposed action and does not warrant the preparation of an environmental impact statement for the proposed action. Accordingly, it has been determined that a Finding of No Significant Impact is appropriate.

List of Preparers

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Sources Used

1. Xcel Energy, Pathfinder Decommissioning Plan, February 2004 (ADAMS ML040630549).
2. Xcel Energy, RAI Response and Revision to Pathfinder Plan, December 2004 (ADAMS ML050100054).
3. U.S. Nuclear Regulatory Commission, Inspection Report 030-05004/04-001, December 15, 2004 (ADAMS ML043500229).
4. U.S. Nuclear Regulatory Commission, “Consolidated NMSS Decommissioning Guidance Decommission Process for Materials Licensees,” NUREG 1757, September 2002.
5. U.S. Nuclear Regulatory Commission, “Environmental Review Guidance for Licensing Actions Associated with NMSS Programs,” NUREG-1748, August 2003.